We claim:

1. An isolated nucleic acid molecule comprising a member of the group consisting of:

(a) a nucleotide sequence that encodes a polypeptide having the amino acid sequence of FIG. 2;

(b) the complement of the nucleotide sequence of (a);

(c) a HBMYCNG gene or a complement of a HBMYCNG gene as contained in ATCC Deposit No. _____;

(d) an isolated nucleic acid molecule comprising nucleotides 23 to 2011 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 minus the start codon;

(e) an isolated nucleic acid molecule comprising nucleotides 20 to 2011 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 including the start codon;

(f) An isolated nucleic acid molecule comprising the nucleotide sequence of FIG. 1;

(g) A nucleic acid molecule comprising a nucleotide sequence encoding a deletion mutant of HBMYCNG or the complement of the nucleotide sequence of the deletion mutant of HBMYCNG;

(h) a nucleic acid molecule capable of hybridizing to and which is at least 95% identical to a nucleic acid molecule of (a), (b), (c), (d), (e), (f), or (g); and

(i) An isolated nucleic acid molecule of (h), further comprising a label.

2. An isolated nucleic acid molecule comprising a nucleotide sequence that hybridizes to the nucleic acid of claim 1 and encodes a naturally occurring HBMYCNG polypeptide.

3. An isolated nucleic acid molecule of claim 2 further comprising the nucleotide sequence linked uninterrupted by stop codons to a nucleotide sequence that encodes a heterologous protein or peptide.

4. A recombinant vector containing the nucleotide sequence of claim 1.

5. A genetically engineered host cell containing the nucleotide sequence of claim 1.

6. The genetically engineered host cell of claim 5 containing the nucleotide sequence of claim 1 operatively associated with a regulatory nucleotide sequence containing transcriptional and translational regulatory information that controls expression of the nucleotide sequence in a host cell.

7. A method of making an HBMYCNG polypeptide comprising the steps of:

(a) culturing the cell of claim 6 in an appropriate culture medium to produce an HBMYCNG polypeptide; and

(b) isolating the HBMYCNG polypeptide.

8. The method of claim 7, wherein the HBMYCNG polypeptide is HBMYCNG or a functionally equivalent derivative thereof.

9. An antibody preparation which is specifically reactive with an epitope of an HBMYCNG polypeptide.

10. A transgenic animal comprising the nucleic acid molecule of claim 1.

11. A substantially pure polypeptide comprising a member of the group selected from:

(a) A substantially pure polypeptide encoded by the nucleic acid molecule of claim 1;

(b) A substantially pure human polypeptide, as depicted in FIG. 2;

(c) A substantially pure polypeptide which is at least 95% identical to the polypeptide as set forth in FIG. 2;

(d) A substantially pure polypeptide comprising amino acids 2 to 664 of SEQ ID NO:2, wherein said amino acids 2 to 664 comprise a polypeptide of SEQ ID NO:2 minus the start methionine; and

(e) A substantially pure polypeptide comprising amino acids 1 to 664 of SEQ ID NO:2.

12. A fusion protein comprising a polypeptide of claim 11 and a second heterologous polypeptide.

13. A test kit for detecting and/or quantitating a wild type or mutant HBMYCNG nucleic acid molecule in a sample, comprising the steps of contacting the sample

with a nucleic acid molecule of claim 1; and detecting and/or quantitating the label as an indication of the presence or absence and/or amount of a wild type or mutant HBMYCNG nucleic acid.

14. A test kit for detecting and/or quantitating a wild type or mutant HBMYCNG polypeptide in a sample, comprising the steps of contacting the sample with the antibody of claim 9; and detecting and/or quantitating a polypeptide-antibody complex as an indication of the presence or absence and/or amount of a wild type or mutant HBMYCNG nucleic acid.

15. A method for identifying compounds that modulate HBMYCNG activity comprising:

(a) contacting a test compound to a cell that expresses a HBMYCNG gene;

(b) measuring the level of HBMYCNG gene expression in the cell; and

(c) comparing the level obtained in (b) with the HBMYCNG gene expression obtained in the absence of the compound;

such that if the level obtained in (b) differs from that obtained in the absence of the compound, a compound that modulates HBMYCNG activity is identified.

16. A method for identifying compounds that modulate HBMYCNG activity comprising:

(a) contacting a test compound to a cell that contains a HBMYCNG polypeptide;

(b) measuring the level of HBMYCNG polypeptide or activity in the cell; and

(c) comparing the level obtained in (b) with the level of HBMYCNG polypeptide or

activity obtained in the absence of the compound;

such that if the level obtained in (b) differs from that obtained in the absence of the compound, a compound that modulates HBMYCNG activity is identified.

17. A method for identifying compounds that regulate ion channel-related disorders, comprising:

(a) contacting a test compound with a cell which expresses a nucleic acid of claim 1, and

(b) determining whether the test compound modulates HBMYCNG activity.

18. A method for the treatment of ion channel-related disorders, comprising administering an effective amount of a compound that increases expression of a HBMYCNG gene.

19. A pharmaceutical formulation for the treatment of ion channel-related disorders, comprising a compound that activates or inhibits HBMYCNG activity, mixed with a pharmaceutically acceptable carrier.

20. A method for identifying compounds that modulate the activity of an ion channel comprising:

(a) contacting a test compound to a cell that expresses a HBMYCNG gene and the ion channel, and measuring Ca+2 flux into the cell;

(b) contacting a test compound to a cell that expresses a HBMYCNG gene but does not express the ion channel, and measuring Ca+2 flux into the cell; and

(c) comparing Ca+2 flux obtained in (b) with the Ca+2 flux obtained in (a);

such that if the level obtained in (b) differs from that obtained in (b), a compound that modulates ion channel activity is identified.

21. An isolated nucleic acid molecule consisting of a member of the group consisting of:

(a) a nucleotide sequence that encodes a polypeptide having the amino acid sequence of FIG. 2;

(b) the complement of the nucleotide sequence of (a);

(c) a HBMYCNG gene or a complement of a HBMYCNG gene as contained in ATCC Deposit No. _____;

(d) an isolated nucleic acid molecule comprising nucleotides 23 to 2011 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 minus the start codon;

(e) an isolated nucleic acid molecule comprising nucleotides 20 to 2011 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 including the start codon;

(f) An isolated nucleic acid molecule comprising the nucleotide sequence of FIG. 1;

(g) A nucleic acid molecule comprising a nucleotide sequence encoding a deletion mutant of HBMYCNG or the complement of the nucleotide sequence of the deletion mutant of HBMYCNG;

(h) a nucleic acid molecule capable of hybridizing to and which is at least 95% identical to a nucleic acid molecule of (a), (b), (c), (d), (e), (f), or (g); and

(i) An isolated nucleic acid molecule of (h), further comprising a label.

22. A substantially pure polypeptide consisting of a member of the group selected from:

(a) A substantially pure polypeptide encoded by the nucleic acid molecule of claim 1;

(b) A substantially pure human polypeptide, as depicted in FIG. 2;

(c) A substantially pure polypeptide which is at least 95% identical to the polypeptide as set forth in FIG. 2;

(d) A substantially pure polypeptide comprising amino acids 2 to 664 of SEQ ID NO:2, wherein said amino acids 2 to 664 comprise a polypeptide of SEQ ID NO:2 minus the start methionine; and

(e) A substantially pure polypeptide comprising amino acids 1 to 664 of SEQ ID NO:2.